Measurement of the t(t)over-bar production cross section, the top quark mass, and the strong coupling constant using dilepton events in pp collisions at root s=13TeV

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Abstract

A measurement of the top quark-antiquark pair production cross section sigma(t (t) over bar) in proton-proton collisions at a centre-of-mass energy of 13 TeV is presented. The data correspond to an integrated luminosity of 35.9 fb(-1), recorded by the CMS experiment at the CERN LHC in 2016. Dilepton events (e(+/-) mu(-/+), mu(+) mu(-), e(+) e(-)) are selected and the cross section is measured from a likelihood fit. For a top quark mass parameter in the simulation of m(t)(MC) = 172.5 GeV the fit yields a measured cross section sigma(t (t) over bar) = 803 +/- 2 (stat) +/- 25 (syst) +/- 20 (lumi) pb, in agreement with the expectation from the standard model calculation at next-to-next-to-leading order. A simultaneous fit of the cross section and the top quark mass parameter in the POWHEG simulation is performed. The measured value of m(t)(MC) = 172.33 +/- 0.14 (stat)(-0.72)(+0.66) (syst) GeV is in good agreement with previous measurements. The resulting cross section is used, together with the theoretical prediction, to determine the top quark mass and to extract a value of the strong coupling constant with different sets of parton distribution functions.

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1. **Measurement of the Inelastic Proton-Proton Cross Section at root s=13 TeV with the ATLAS Detector at the LHC** — Times Cited: 89
By: Aaboud, M.; Aad, G.; Abbott, B.; et al.
Group Author(s): ATLAS Collaboration
PHYSICAL REVIEW LETTERS Volume: 117 Issue: 18 Article Number: 182002 Published: OCT 26 2016

2. **Measurement of the top quark mass in the t(t)over-bar -> dilepton channel from root s=8TeVATLAS data** — Times Cited: 54
By: Aaboud, M.; Aad, G.; Abbott, B.; et al.
Group Author(s): ATLAS Collaboration
PHYSICS LETTERS B Volume: 761 Pages: 350-371 Published: OCT 10 2016

3. **Measurement of the t (t)over-bar production cross-section using e mu events with b-tagged jets in pp collisions at root s = 7 and 8 TeV with the ATLAS detector (vol 76, pg 642, 2014)** — Times Cited: 16
By: Aad, G.; Abbott, B.; Abdallah, J.; et al.
Group Author(s): ATLAS Collaboration
EUROPEAN PHYSICAL JOURNAL C Volume: 76 Issue: 11 Article Number: 642 Published: NOV 23 2016

4. **Measurement of the t(t)over-bar production cross-section using e mu events with b-tagged jets in pp collisions at root s=7 and 8 TeV with the ATLAS detector** — Times Cited: 124
By: Aad, G.; Abbott, B.; Abdallah, J.; et al.
Group Author(s): ATLAS Collaboration
EUROPEAN PHYSICAL JOURNAL C Volume: 74 Issue: 10 Article Number: 3109 Published: OCT 29 2014

5. **Determination of the pole and (MS)over-bar masses of the top quark from the t(t)over-bar cross section** — Times Cited: 60
By: Abazov, V. M.; Abbott, B.; Acharya, B. S.; et al.
Group Author(s): D0 Collaboration
PHYSICS LETTERS B Volume: 703 Issue: 4 Pages: 422-427 Published: SEP 20 2011

6. **Combination of measurements of inclusive deep inelastic e(+/-)p scattering cross sections and QCD analysis of HERA data** — Times Cited: 226
By: Abramowicz, H.; Abt, I.; Adamczyk, L.; et al.
EUROPEAN PHYSICAL JOURNAL C Volume: 75 Issue: 12 Article Number: 580 Published: DEC 8 2015

7. **HERAFitter** — Times Cited: 86
By: Alekhin, S.; Behnke, O.; Belov, P.; et al.
EUROPEAN PHYSICAL JOURNAL C Volume: 75 Issue: 7 Article Number: 304 Published: JUL 2 2015

8. **Parton distribution functions, alpha(s), and heavy-quark masses for LHC Run II** — Times Cited: 98
By: Alekhin, S.; Bluemlein, J.; Moch, S.; et al.
PHYSICAL REVIEW D Volume: 96 Issue: 1 Article Number: 014011 Published: JUL 18 2017

9. **HATHOR - HAdronic Top and Heavy quarks crOss section calculatoR** — Times Cited: 349
By: Aliev, M.; Lacker, H.; Langenfeld, U.; et al.
COMPUTER PHYSICS COMMUNICATIONS Volume: 182 Issue: 4 Pages: 1034-1046 Published: APR 2011

10. **Vector boson plus one jet production in POWHEG** — Times Cited: 67
By: Alioli, Simone; Nason, Paolo; Oleari, Carlo; et al.
JOURNAL OF HIGH ENERGY PHYSICS Issue: 1 Article Number: 095 Published: JAN 2011

11. **A general framework for implementing NLO calculations in shower Monte Carlo programs: the POWHEG BOX** — Times Cited: 1,096
By: Alioli, Simone; Nason, Paolo; Oleari, Carlo; et al.
JOURNAL OF HIGH ENERGY PHYSICS Issue: 6 Article Number: 043 Published: JUN 2010

12. **The automated computation of tree-level and next-to-leading order differential cross sections, and their matching to parton shower simulations** — Times Cited: 2,564
By: Alwall, J.; Frederix, R.; Frixione, S.; et al.
JOURNAL OF HIGH ENERGY PHYSICS Issue: 7 Article Number: 079 Published: JUL 17 2014

13. **Determination of the strong coupling constant alpha(s)(&ITm&ITZ) in next-to-next-to-leading order QCD using HI jet cross section measurements** — Times Cited: 14
By: Andreev, V.; Baghdasaryan, A.; Begzsuren, K.; et al.
Group Author(s): H1 Collaboration
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14. **Effects of color reconnection on t(t)over-bar final states at the LHC** — Times Cited: 33
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JOURNAL OF HIGH ENERGY PHYSICS Issue: 11 Article Number: 043 Published: NOV 10 2014

15. **First combination of Tevatron and LHC measurements of the top-quark mass** — Times Cited: 4
Group Author(s): ATLAS, CDF, CMS and D0 Collaborations
arXiv:1403. 4427 Published: 2014

16. Title: [not available] — Times Cited: 41
Group Author(s): ATLAS Collaboration
Phys. Lett. B Volume: 761 Issue: 136 Published: 2016

17. **Complete two-loop electroweak fermionic corrections to the effective leptonic weak mixing angle sin(2)theta(lept)(eff) and indirect determination of the Higgs boson mass** — Times Cited: 102
By: Awramik, M; Czakon, M; Freitas, A; et al.
PHYSICAL REVIEW LETTERS Volume: 93 Issue: 20 Article Number: 201805 Published: NOV 12 2004

18. **The global electroweak fit at NNLO and prospects for the LHC and ILC** — Times Cited: 318
By: Baak, M.; Cuth, J.; Haller, J.; et al.
Group Author(s): Gfitter Grp
EUROPEAN PHYSICAL JOURNAL C Volume: 74 Issue: 9 Article Number: 3046 Published: SEP 16 2014

19. **Percent-Level-Precision Physics at the Tevatron: Next-to-Next-to-Leading Order QCD Corrections to q(q)over-bar -> t(t)over-bar+X** — Times Cited: 278
By: Baernreuther, Peter; Czakon, Michal; Mitov, Alexander
PHYSICAL REVIEW LETTERS Volume: 109 Issue: 13 Article Number: 132001 Published: SEP 25 2012

20. **Parton distributions with LHC data** — Times Cited: 796
By: Ball, Richard D.; Bertone, Valerio; Carrazza, Stefano; et al.
Group Author(s): NNPDF Collaboration
NUCLEAR PHYSICS B Volume: 867 Issue: 2 Pages: 244-289 Published: FEB 11 2013

21. **E+E- PRODUCTION OF HEAVY QUARKS IN THE STRING MODEL** — Times Cited: 199
By: BOWLER, MG
ZEITSCHRIFT FUR PHYSIK C-PARTICLES AND FIELDS Volume: 11 Issue: 2 Pages: 169-174 Published: 1981

22. **LHAPDF6: parton density access in the LHC precision era** — Times Cited: 381
By: Buckley, Andy; Ferrando, James; Lloyd, Stephen; et al.
EUROPEAN PHYSICAL JOURNAL C Volume: 75 Issue: 3 Article Number: 132 Published: MAR 20 2015

23. **General-purpose event generators for LHC physics** — Times Cited: 215
By: Buckley, Andy; Butterworth, Jonathan; Gieseke, Stefan; et al.
PHYSICS REPORTS-REVIEW SECTION OF PHYSICS LETTERS Volume: 504 Issue: 5 Pages: 145-233 Published: JUL 2011

24. **The t(t)over-bar cross-section at 1.8 and 1.96 TeV: a study of the systematics due to parton densities and scale dependence** — Times Cited: 210
By: Cacciari, M; Frixione, S; Ridolfi, G; et al.
JOURNAL OF HIGH ENERGY PHYSICS Issue: 4 Article Number: 068 Published: APR 2004

25. **FastJet user manual** — Times Cited: 1,930
By: Cacciari, Matteo; Salam, Gavin P.; Soyez, Gregory
EUROPEAN PHYSICAL JOURNAL C Volume: 72 Issue: 3 Article Number: 1896 Published: MAR 2012

26. **The anti-k(t) jet clustering algorithm** — Times Cited: 2,573
By: Cacciari, Matteo; Salam, Gavin P.; Soyez, Gregory
JOURNAL OF HIGH ENERGY PHYSICS Issue: 4 Article Number: 063 Published: APR 2008

27. **Vector boson pair production at the LHC** — Times Cited: 451
By: Campbell, John M.; Ellis, R. Keith; Williams, Ciaran
JOURNAL OF HIGH ENERGY PHYSICS Issue: 7 Article Number: 018 Published: JUL 2011

28. **Soft-gluon resummation for Higgs boson production at hadron colliders** — Times Cited: 382
By: Catani, S; de Florian, D; Grazzini, M; et al.
JOURNAL OF HIGH ENERGY PHYSICS Issue: 7 Article Number: 028 Published: JUL 2003

29. **Combination of CDF and D0 results on the mass of the top quark using up 9. 7 fb-1 \documentclass[12pt]{minimal} \usepackage{amsmath} \usepackage{wasysym} \usepackage{amsfonts} \usepackage{amssymb} \usepackage{amsbsy} \usepackage{mathrsfs} \usepackage{upgreek} \setlength{\oddsidemargin}{-69pt} \begin{document}$$9. 7\text{ fb }^{-1}$$\end{document} at the Tevatron** — Times Cited: 3
Group Author(s): CDF and D0 Collaborations
arXiv:1608. 01881 Published: 2016

30. **Measurement of masses in the t(t)over-tilde system by kinematic endpoints in pp collisions at root s=7 TeV** — Times Cited: 53
By: Chatrchyan, S.; Khachatryan, V.; Sirunyan, A. M.; et al.
Group Author(s): CMS Collaboration
EUROPEAN PHYSICAL JOURNAL C Volume: 73 Issue: 7 Article Number: 2494 Published: JUL 2013

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